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PHOTOGRAPHY AT THE ANTWERP EXHIBITION.

ANTWERP, July 15th, 1894.

AFTER a pleasant voyage of twelve days the Red Star Liner "Rhynland" made fast to the Quay at Antwerp. Among the first to cross the bridge and step on shore were two persons who had crossed the ocean intent upon matters photographic,—one an enthusiastic hand-camerist from Chicago, who had been shooting at everything picturesque that offered itself as a target during the voyage; the other Mr. J. Focus Snappschotte, who has had more or less experience in reporting the various doings of the Turkeytown Camera Club. The custom-house formalities having been gone through with, lodgings were secured in one of the houses facing the *Place de Vert*, and preparations were made to "do" the exhibition on the next day.

Antwerp, the commercial metropolis of Belgium, is the chief seaport of that kingdom; and history tells us that it was founded in the seventh century. Except the churches and a few other buildings, and the narrow and crooked streets, there is little to impress the visitor with the antiquity of "Anvers." At the present time the city seems to be in a state of transition, and upon every side new buildings are to be seen. Within the past decade the population has increased rapidly, until it now numbers over a quarter of a million souls.

The chief monument of Antwerp is its Gothic Cathedral, one of the finest in the world, with a spire 403 feet high. But little, however, of the original building remains except the walls, the structure having suffered severely in the various wars that swept over the locality. During the Napoleonic wars it is said that the Cathedral was twice sacked, the paintings being sent to Paris. After the fall of Napoleon they were, however, returned. Among these is the master-piece of Rubens, "The Descent from the Cross." His "Elevation of the Cross," "Assumption" and "Resurrection," together with many other pictures by the most renowned artists, are also on the walls of the church. The pictures form one of the chief attractions for visitors, and are carefully covered with heavy curtains during the public services. Between the hours of 12 and 4 p.m., however, the paintings can be seen by any one who chooses to pay a franc for admission to the church, and another franc or two to the church guide, who simply tells you what they are intended to represent.

There is a peculiarity about these "chef-d'œuvres of Rubens, which give one the impression that they are the result of the use of a short-focus lens. The hands and the objects in the foreground are abnormally large in proportion to the rest of the figure. This pecularity can readily be seen in the photographs of the paintings.

Leaving Antwerp and its narrow lanes, a visit was made to the Exhibition. It may be said that it is still in an unfinished state, as all the exhibits do not seem as yet to be in place. The chief interest centres in the exhibits of the diamond merchants, Antwerp being the great centre for cutting that precious gem. It may almost be said that there are quarts of diamonds of all sizes, colors and qualities on exhibition. A finger-ring made of a solid diamond attracted much attention. The diamond circle was about the thickness of an ordinary plain gold wedding ring. Two exhibits show all the practical processes of cutting and polishing, from the rough stone to the polished gem.

The photographic exhibits in the exhibition fail to show any novelties, and with the exception of the German installation, are exceedingly disappointing. The photographic department of the

German exhibit is in charge of Mr. Robert Schneemilch, of Berlin, who offers the visitors every opportunity to become acquainted with the photographic products of the Fatherland. The most imposing individual exhibit in this department is that of Carl Ernst & Co., of world-wide reputation, who show mounts of all kinds, with specimens of the most artistic embossing and printing. Next comes the firm of Engleman & Schneider, of Dresden, who show some novelties in accessories, in addition to their staple line. Among the former is a Nautilus-shell drawn by two stuffed swans, for child-studies. Solid oak chairs and tables are shown, on which, it is stated, the hand-carving cost from fifty to one hundred dollars each. In papier-mache the variety runs through their whole catalogue, from a papier-mache pug-dog to the rustic settee.

Arnold Rochall, of Berlin, shows some novelties in metal frames for photographs, in all sizes from a carte-de-visite to the 36x24 crayon. Carl Bentzin, of Görlitz, shows a number of universal cameras for tourists and amateurs. These cameras are superior in design and workmanship to any in Europe or America. They, however, have one drawback,—that of weight. Pinger, of Berlin, has an assortment of cards and mounts of fine quality. Fröhlich, of the same city, exhibits wall decorations. Schröter, of Leipzig, shows a number of boxes of novel construction for negatives, transparencies, etc. A new burnisher, "Heureka," by Anders, of Dresden, is placarded as the "most complete enameler by both hot and cold process."

The only German objectives represented are a series by C. P. Goerz, of Berlin, which have been fully described by the photographic press.

Steinbach & Cie make the best exhibit of photographic papers suitable for both the albumen and the various emulsion processes. The various tinted papers in large rolls for coating are especially fine and of even tone.

The only shutter found on exhibition was a novel arrangement, intended to be worked back of the lens on the inside of the camera, by Shippang & Wehnkel, of Berlin. It is inferior to American shutters.

In portraiture Germany is well represented. Antonetty, of Cologne, exhibits a number of comparative prints on Celloïdin and Orchidin papers, also a direct enlargement on the new Colonia paper by development. This print measures about 22x40" inches. The Rheinisch Albumen Fabrik exhibits a frame of portraits on albumen paper, from negatives by Lantin. The effect is certainly equal to the best Aristotype, and seems to prove that albumen prints need fear nothing from their competitors, and have yet a future. Next comes the frame of Bieher, of Berlin. The prints are on Celloidine paper, made by Schütze & Noade.

The most interesting exhibit in the section is that of Dr. Paul Jeserich, of Berlin, labeled "Criminal Photography," and giving many instances where the administration of justice has been aided by sensitive plate and camera. One of the most curious cases is one where two empty cartridges were found beside a murdered man. Several arrests were made of suspects who had guns firing cartridges of similar calibre. By firing a number of cartridges from these guns and similar ones, and then photographing and enlarging the trigger or hammer indentation, it was easily shown from what gun and barrel (right or left) the fatal shots were fired. A conviction followed, and the criminal, previous to his execution, acknowledged the correctness of Dr. Jeserich's testimony in every particular.

The first portraits to attract attention in entering the department are the frame of specimens by Th. Lantin, Aachen. The effects in posing are new and artistic, and the technique perfect. The prints are platinotype and albumen, both of equal excellence. Blitz-pulver photography is represented in its best aspect by Julius Kricheldorf, Berlin. The subjects are theatrical groups and character portraits, and demonstrate the value of Blitz-pulver in professional portraiture. Albert Meyer, of Berlin, shows a large frame of albumen prints, noticeable for artistic posing and beauty of prints. Bengue and Kindermann, of Hamburg, show some artistic novelties in mounting their platinotypes. Henry Gerdom exhibits a number of nine-inch heads, bearing the legend that they are "direct original prints." In the immediate vicinity

of the above is a fine exhibit of Aristotypes on Kraft and Stendel's "elephant" celloidin paper. The subjects are portraits and groups from negatives by the best German artists.

The Austrian Section next attracts our notice. Unfortunately no professional portraitists are represented. The only photographs on the walls are a series of views of Salzkammergut, Vienna, Prague and Gratz, made by the government. The only piece of photographic apparatus in the Austrian selection is a burnisher, "The Fernando."

Joseph Trauslik, of Prague, shows a case of what he calls "photo-plastiques," or photographs in relief. This is certainly a novelty, notwithstanding the crudeness of the specimens shown. No information could be obtained as to the process, which will have to be greatly improved before it can become of either commercial or artistic value.

The Belgian Section makes a pleasing appearance, thanks to the "Association Belge de Photographie." The exhibitors are mostly amateurs, of the highest class, however. The character studies, groups and compositions by Alberic Lunden are among the best in the exhibition. The only two Belgian professionals represented here are Raymond, of Antwerp, who shows very ordinary work, and Fabronius, of Brussels, whose portraits are second to none. Joszing et Fils, with sepia prints on panels, platinotypes on satin, and carbon transfers on pearl, well deserve the praise bestowed upon their work. A series of fine photo-micrographs are also shown. A general stock-house exhibit, by Van Neck, of Antwerp, completes the Belgian department.

The French photographic exhibit is scattered through the section without order or system. Many of the exhibits are still unpacked or in disorder. Among the photographic exhibits noticed was a series of lantern slides, by Levy and Fils, of Paris, among which were sandwiched a number of slides made in Philadelphia.

The only portraitist in the French section was Alfred Gendraud, of Clermont-Ferrand, who shows very fine portraits, mostly carbon, in various shades of color. They are all framed in special frames, harmonizing with the various shades of the prints.

In the British section there was but a single professional exhibit, that of W. J. Byrne and Co., Richmond, Surrey, London, who exhibited photographs of a number of crowned heads and royal personages of Europe. Messrs. William Watson and Sons, London, also make a fine display of photographic apparatus. Skinner and Co., London, also make an exhibit of a few cameras, and novel dark-slides or holders.

A walk through the British section impresses one with the great use made by the various railway companies and industrial establishments of modern advanced photography. The finest and largest views in the whole exhibition are shown by the different railway companies of Great Britain. Noticeable among them are an illustration of the North of Ireland tour, specimens in carbon by R. Welsh, of Belfast,—subjects, Giants' Causway, Ess-no-crumb, Glenariff, County Antrim (a waterfall), etc. The Glasgow and South-Western Railway show St. Enoch's Station, and scenes in Glasgow. The Great Western Railway, Midland, and other railways show subjects of interest and views in their respective territory.

Among the industrial establishments that here make extensive use of photography are, the Sykes Combined Lock and Block System, and Hems and Son, sculptors and church furnishers. Several frames are used to show the various artistic carvings of the latter firm. A photograph of the reredos presented to the Bishop of Japan from the Guild of St. Paul, London, (Oct. 13th, 1893), displayed all the beauty of the original carvings.

The exhibition, taken as a whole, is from an American point of view small and disappointing. However, I suppose for this place it is a big thing.

J. Focus Snappschotte.

The Old Man Would Have His Joke.—

Two boys who owned a cattle farm out West,
Christened it "Focus," at their sire's request:
The old man thought it quite a good conceit,
For there the sun's rays meat—(the sons raise meat!)

PHOTOGRAPHERS AT HOME AND ABROAD.*

THIS will not be a treatise on Ethnology, but simply delineating a few characteristics of prominent and well-known photographers at home and abroad. Time and space does not permit me to go into details, so will simply give you in as concise a manner as possible a short sketch of the lives of some of the oldest and well-known photographers. The lives of successful men are always full of interest to me, and I always receive instruction and encouragement by perusing the lives of such men as are known to have made their mark in any known profession.

In my earliest days I have heard of Carl Wunder, of Hanover, Germany. His productions have made him a name; he has been honored and elevated among his fellows. His portrait work at present, however, has an old style about it, which makes him less popular among his former customers, and he allows some of his best trade to slip away to some of the younger and more progressive competitors. His landscapes, however, can not be beaten by any one.

Who has not seen some of Scharwechter's creations but to admire them? He is an artistic poser, making the best of the subject at hand. At last year's Ohio Convention one of this artist's pictures was placed on the easel for criticism. It was examined, discussed and re-examined by critics, but not criticised. That picture I have in my possession, and value it very highly. And yet you might be surprised to know that his patrons must climb four flights of stairs before they come to his reception room, and then they pay eight dollars for a dozen cabinets on albumen paper, and ten dollars for a dozen on platinum.

There is another photographer in Germany who has taken prizes in America,— Mr. Frederick Mueller, of Munich. He is a very busy man, always on a run, never too tired to try anything new in the profession. He is quite a prize winner, having won a large gold medal in his own country in 1887; in 1883 at Cob-

*Read before the P. A. of A. at St. Louis, by A. L. Bowersox.

lenz, St. Louis, and Frankfort the same year; 1886 at Stuttgart, and London in 1887; Boston and Melbourne in 1888; Vienna in 1890, and Amsterdam and Dresden in 1891. In 1892 I was present at the Convention at Wiesbaden where he won a silver cup for the best pictures on Mignon Paper. Mr. Mueller has in use in his atelier a peculiarly constructed camera. It is made like a stereoscopic instrument, having two lenses, but only one is used to expose the plate, while the other is used for focusing only. The plate is placed in position and the slide drawn, then the image is focused with the other lens. The operator can take the subjects while they are wholly unconscious of the fact, thereby obtaining an unassumed and natural expression. Some of you enterprising, push and go-ahead photographers try this method, and see what excellent results can be obtained. The letter-head Mr. M. uses reads like:

Photographische Anstalt,
von Freedr. Mueller,
Herzogle Bayer, Hofphotograph.
9 Amelien Strasse,
Gegeneuber dem Resturant Kunstlerheim,
Munchen.

Another of Germany's progressive prize winners is Fritz Eilander of Cologne. This gentleman is not behind his German brethren in portraiture. He also won first prizes in Berlin at the German Photographers' Association in 1884; also in New York in 1885; London, 1886; Florence, 1888, and Melbourne, 1889. Mr. Eilander's plan of a skylight for general use may be of interest. His light is constructed in three separate sections. This he claims is the best light for general use.

Europe as well as America has a number of distinguished photographers. Time and space will not permit to dwell upon the merits of such men as Nadar of Paris; Von Der Weyde of London, Lafayette of Dublin, and Warnake of Glasgow. The last-named gentleman is as well informed in business principles as in art. Mr. W. was receiving twenty-eight shillings for cabinets, when news reached him that Lafayette, of Dublin, was going to open an establishment in his city. Now, what did he do? Make

cabinets for ten shillings a dozen to drive the enemy from the field? No, he raised his price to thirty-six shillings, or nine dollars per dozen, instead of lowering his price, as is customary with us, and his explanation for his action was this: "That a certain class of people always prefer to go where the highest price is charged for the best work." He raised his price to a point where his competitor could not very well raise him one shilling and secure his trade.

Now let us retrace our steps homeward, and see if we have not some who have done as much or more to raise our beloved art—some would say profession—to the high standard to which it has been raised.

Mr. N. Sarony, of New York, has the credit of being one of the first to create a revolution in the photo art by his posing machine, which he exhibited and explained to the profession personally, thereby creating a desire in the breasts of American photographers for higher art. And to the genius and example of Mr. S. is ascribed the credit for the enviable position now reached by American photography. I would refer my respectable audience to the January number of 1893 of *Wilson's Photographic Magazine* for a full and interesting biography of the life of this distinguished and honored American photographer.

If you had been in New York on the morning of the 14th of October, 1853 (not 1492, when America was discovered), you would doubtless have heard the bells ringing and the glad news heralded that "unto us a son is born, unto us a prince is given, who shall lead his (photographic) people, and his name was not called wonderful counselor," but B. I. Falk. This name is not wonderful, but his productions *are* truly wonderful. Mr. Falk, after finishing his education by graduating from the College of the City of New York, took up crayon drawing. Being naturally of an investigating turn of mind he interested himself in scientific studies. After making crayons for five years he enlarged his studio into a photographic gallery. In 1881 he moved to Broadway, where the business grew rapidly, developing largely in the line of portraits of celebrities. In 1883 Mr. Falk was completely successful in producing the first electric light stage pho-

tographs, where a large volume of electric light was used. This took place at midnight, May 1st, 1883, the scene being laid in a play called "A Russian Honeymoon." Over thirty persons figured in the scene. A rectilinear lens was used, and full time pictures produced in six seconds. In 1892 Mr. Falk moved into his present quarters Nos. 13 and 15 West Twenty-fourth Street.

In portrait work it is the aim of Mr. Falk to secure simplicity of treatment, and bringing to the surface the best in the subject at hand. This also applies to professional work, in which picturesqueness and striking effects are generally desirable. Mr. Falk says: "I name expression, posing and lighting in order as they appear to be most important. The technique of the profession being absolutely under the control of the operator since the introduction of dry plates, there is no excuse now for any but perfect photographic results. I have always made my price high enough, so that I did not have to consider the cost of material while doing my work." He thinks the camera in proper hands is, in many ways, a finer art tool to-day than the chisel and brush, although, like them, it has its limitations. In the past six or seven years Mr. Falk has been engaged in a bitter warfare against all sorts of pirates who prey upon the photographer's creations. To do this it was necessary to copyright thousands of photographs. The sweeping decisions that have been rendered in the United States courts in a number of cases have raised the dignity of our profession in making our rights respected where they were entirely ignored. This credit is due Mr. Falk, for he has spent many dollars in defense of his and our rights. So we say, "Honor to whom honor is due."

Still another of the honored of our ranks is the able and indomitable F. Gutekunst, of Philadelphia. Who has not seen productions from this master in photography? Mr. Gutekunst in his early days was engaged in the drug business, but being of an investigating turn of mind he commenced to experiment in Daguerro and ambrotypes, and he modestly says "his friends really thought they had merit." So he was induced to leave the drugs and make faces, in which occupation he, with a few others, have succeeded admirably. It is to one of his excellent

pictures that I attribute a great deal of the little success, if any, I have attained. When well-nigh discouraged working for $3.50 a week, out of which had to come my board and clothing, I saw one of his masterpieces in the *Philadelphia Photographer*, now *Wilson's Photographic Magazine*. This was in 1878. It appeared like the star to the shepherds, and was to me like an oasis in a desert. If such pictures, I thought, can be made with a camera, I take courage, and press forward toward the prize of the high calling to which photography has been elevated.

In all these years of success our friend has not lost an interest in those who have not attained the topmost round, unlike the haughty despot who, after reaching the topmost round of the ladder, turns his back, scorning the base degrees by which he ascended. After a person comes to a point in life where his productions seem perfect, and there is nothing more to learn, the usefulness of that life has reached its zenith.

Last but not least, let me call your attention to one who, by his unobtrusive acts and productions, has kept in advance of the progress photography has made. Always in favor of conventions, and that they should be carried on for the benefit and advancement of its members. The subject of our sketch, Mr. James Landy, was born in New York, and commenced his photographic career in 1850. He continued his work there until 1863, when he removed to Cincinnati, where he has done a prosperous business ever since. He has from time to time produced pictures that illustrated various subjects that have brought him honor and reputation. Mr. Landy won the Blair Cup, besides medals at home and abroad. Mr. Landy's work is bold, and yet full of detail, delineating the subject as well as the artist in the same picture.

In reply to what he considers essentials to success Mr. Landy says: "That to succeed in anything, your heart must be in your work; be sincere and conscientious in all you do; give all your time and thought to whatever you are engaged in; read and become familiar with the work of those who have made their mark. Always keep up the standard of your work, and compensation will surely follow."

Mr. Landy is in favor of and thinks that business methods should be more discussed at our Conventions, rather than processes. This has always been a desire of mine, to know more about business, how to conduct a business on successful principles. This reminds me of the man who said, "It is no disgrace to be poor, but very inconvenient."

One more word in closing to the young push and progress of this Association,—Let us always work for the maintenance of our Association. Let us all say, "*Vive l'Association.*" Give of our time, talent, and money if need be, and raise it to the standard it should be. Think not, young man, because I have failed to mention your name among the honored, that I fail to appreciate your work and devotion to the cause. It is not that when you have been plodding along for fifty years, or more, some one may write a much better and abler article on your success and abilities, but remember Pope says:

> "A little learning is a dangerous thing,
> Drink deep or taste not the Pierian Spring.
> These shallow draughts intoxicate the brain,
> And drinking largely sobers us again.
> Whoever thinks a faultless piece to see,
> Thinks what ne'er was, nor is, nor e'er shall be."

Postal Cards.—It seems almost incredible that there should be 8,000 varieties of postal cards, but this is the extent claimed for the Watson collection. These, however, include various issues of the same nation and denomination, and also cards issued for special occasions. Postal cards have been in circulation a little less than twenty-four years. The idea originated with Dr. Emanuel Hermann, a professor of national economy at the Imperial Academy in Weiner, in Neustadt, Lower Austria. His ideas, under the head of "New Means of Correspondence by Post," were published, and attracted the attention of the Government officials. The Austrian Director-General of Posts took up the idea, and succeeded in having an issue of postal cards put in circulation in 1869. The original name given to the postal card was the "correspondence carte."

Uncertainty loses its fascination to the hungry man at noontide.

THE BEST LIGHT.

SIGMAR MEHRING, OF BERLIN.

CAN there be anything more tedious than listening to figures, nothing but figures, for one whole hour? And yet there was not one trace of *ennui* observable, on a recent evening between six and seven, when Professor Ferdinand Cohn, of Breslau, gave a lecture on "Short-sightedness, and Artificial Light," in the scientific theatre of the "Uranis," illustrating his remarks with column after coulmn of figures in support of the data he has acquired during a ten years' study of this momentous question.

In 1500 Leonardo da Vinci, according to the *Central Zeitung fur Optik und Mekanik*, recognized the fact that the construction of the camera obscura was similar to that of the human eye. Professor Cohn showed several drawings in support of this fact, and then gave a succinct account of the composition of the eye. According to whether the view of the exterior world is reflected upon the retina or upon the space behind or before it, so is the eye normal, hypermetropic (long-sighted), or myopic (short-sighted). Formerly persons afflicted with hypermetropia were termed long-sighted, and it was appropriately remarked of people with abnormal eyes that those with long sight saw almost nothing, whilst the short-sighted saw still less? Both these evils may be corrected by the use of convex and concave glasses. Short-sighted people who do not wear spectacles habitually contact to the eye, so as to diminish the field of view: they "blink," the Greek word for which is " whence the term myopia. There are two varieties of short-sightedness—the stationary and the progressive; of these the latter is a serious complaint, whereas the use of spectacles suffices for the former.

Professor Cohn quoted statistics to show how widespread short-sightedness is amongst us. From 1864–66 he examined 10,000 children as to their degree of visual power, and he found that 10 per cent. were already short-sighted even at an early age. As he extended his investigations to the different grades of schools and classes, he was enabled to determine the important fact that the percentage of short-sighted persons steadily increases

from the village school to the college, and from the sixth to the first classes, the degree of short-sightedness increasing in equal proportion. Indeed, students are found to have a much higher degree of short-sightedness after passing a certain standard than they had before. Scientists are still undecided as to the primary cause of myopia. It has, however, been definitely determined that continuous and close work is one prolific cause.

The method of illumination employed plays an important part in the life of our school children. After much learned research the scientific world has concluded that "the darker it is the less we can see"—a theory that had been acted upon long previously! The question now was, "How bright must a light be, by which a healthy eye can work without injury?" It was not possible to give a reply until Professor Weber employed the meter candle, which indicates the brightness of a normal candle at a distance of 39⅜ inches, and the photometer, an apparatus by the aid of which the intensity of light can be measured at any distance. It was now found that the illuminating power of ten meter-candles was the lowest degree of light proper for the healthy eye. Artificial light is increased in various ways by lamp-shades and globes; thus a gas flame, which without a shade is equal to one meter-candle power, would be intensified to 8 and 64 meter-candle power under a japanned and polished shade respectively. Nickelled piano lamps triple the light upon the keyboard. A clever idea has been introduced by Mr. Wendriner, who placed a glass globe filled with water before the light. By means of this lens the light of a common tallow candle is intensified in the proportion of from 46 to 65 meter-candles. Without doubt this extremely simple appliance which has been patented (?) will shortly become one of the most useful household articles. A second important invention is the sky-light reflector, which enables a neighboring room to be equally thoroughly lighted throughout, without any dazzling effects being caused by the deflected light. What progress as compared with the period when Goethe exclaimed, "I know of no better invention that could be made than a light which would burn without being snuffed!"

Professor Cohn's ideal light is one that is neither insufficient nor too hot, and that does not dazzle nor flicker. From this the electric light would seem to have a big future before it. In any case everyone should try and get a proper light, and parents and teachers should be especially careful to see that children should have a good light to work by, for the noblest organ of the human body—to wit the eye—is certainly worthy of a good light. —*Optician.*

HARD TIMES.

IS business dull? Yes. Well then it is just the time to clean house. You have been wishing you had time to make some much needed improvements about the gallery. Go at it. Stop talking hard times and dull trade. You drive what few customers you might have away by your woeful countenance and doleful song of hard times. Go to work and clean up; clean out the old rubbish in the dark-room, wash off the shelves, scrub the floor, throw out all the old bottles, etc., that have accumulated for the past ages; whitewash the room if necessary, and get a fresh sweet odor in that rusty old den. Tear down those old dirty curtains in your operating room, and put up some fresh clean ones instead. (You will overtime your first negative, no doubt, but that won't count.) Scrub the floor and dust off the accessories, varnish and paint the chairs, etc., and you will be surprised at the change, and wonder how you have been content to go on so long in the same old rut. Tear up that great pile of old worthless vignette papers, and cut out some nice new ones. Rearrange the furniture and pictures in your reception-room. You've had your chairs and table so long in one spot that you have begun to think it a crime to remove them, but it is not. Make your place so fresh, clean, and attractive that your patrons will be so surprised that they will go out and talk about it to their friends. The first thing you know trade will be so good that you will wonder if times have really been so bad after all.

I went into a dark-room not long since where the air was so foul that it nearly knocked me out. It gave me a headache in less than five minutes. The artist (?) had been complaining of not "feeling well" for some time. "Head ached all the time." I told him I thought if he would get some chloride of lime and cover his sink with it, he would soon get rid of the headache. The floor of the dark-room was so damp all the time that it gave the room a very unhealthy air. I advised him to place a box of unslacked lime on the floor to take up the moisture. The next time I entered that room the air was sweet and pure, and the floor dry and the room altogether healthy.

I have entered galleries where I have wondered if they ever swept the stairs or floor. The pictures on exhibition were so aged and the frames so dilapidated, that it seemed a shame to ask them to do duty. The operating-room or dark-room were so filthy that I wondered if the man ever saw a broom, and yet that very man complained of hard times. You show them some nice pictures from a good tidy workman, and he will say, "Oh! if I had such subjects I could do good work, too; but we don't get them." How could he expect such subjects to enter a place where it would be as much as the rich silk dress was worth to run the risk.

Keep your gallery neat and clean; your dark-room and your trays, graduates, etc., absolutely clean, and your work will improve. Some men will show you a negative or print saturated and dirty, and complain of the brand of paper, when it is only the fault of their dirty, slovenly methods of working. Such men never wash a tray or graduate except in extreme cases. I can tell almost every time what kind of a gallery a man has by the prints he turns out.

Do not sit idly down and complain of poor trade, but go to work and clean up, and the time will pass so quickly that you will have no time to think of such a thing as "hard times." Your "blues" will be a thing of the past, and your pride and ambition will rise rise 100 per cent.—*A. B. C. Demonstraighter, in Wilson's Magazine.*

CASCADE MOUNTAIN ACROSS BOW RIVER, BANFF, B. C.

NEGATIVE BY WILLIAM H. RAU, 1324 CHESTNUT STREET, PHILADELPHIA.

PLATE CRAMER QUICK IROCHROMATIC; ZEISS LENS, SERIES IV; ANASTIGMAT F 64; TIME ONE SECOND; DEVELOPMENT, PYRO AND POTASH.

A PENNSYLVANIA-DUNKER PHOTOGRAPHER.

JULIUS F. SACHSE.

IT will no doubt seem strange to many, that there are at the present age, on the verge of the twentieth century, still some religious denominations within the bounds of the enlightened United States, that object upon doctrinal grounds to have their pictures taken or their lineaments reproduced in any manner, no matter what the process; yet such is the case .The grounds upon which the objections are based is that portraiture in any and every shape is prohibited by Holy Writ, and that the command emanates directly from Paradise, and therefore was not, nor could ever be abrogated.

The law referred to is the Second Commandment, as received by Moses on Mount Sinai. This, taken together with Genesis 1 : 26-28, from the basis of their action. The argument is that God created man in his own image, and afterwards forbade him to make any likeness or image of his creator. By having their own portraits taken, they would virtually be making a likeness of the Creator of the Universe. Upon these grounds various sects, chiefly among the Pennsylvania Germans, have strictly and conscientiously opposed Photography as well as all other methods of portraiture.

The German Dunkers, also known as "German Baptists" or "Brethren," a respectable and influential body of Christians, are perhaps the largest and most important denomination that has thus far adhered to the strict interpretation of the word of the law respecting human portraiture.

This denomination, which is now spread over the whole central belt of the country from the Atlantic to the Pacific, was originated by a few persons in Schwartzenau, Germany, in the year 1708, whence they came to America in 1719, and first settled in and near Germantown, in Pennsylvania, from where they gradually spread over the German counties of the State, and now are to be found in almost every one of the middle and western states, still adhering to the teachings and ceremonial of their Fathers.

Like the Quakers they use plain dress, and language, and will neither take an oath nor fight. They will not go to law, nor take interest for money they lend to one of their own denomination.

About ten years ago it occured to one of the Brethren, an important man in the Church, and whose wife's grand-uncle was a Bishop in the Church, to visit a photograph gallery. Wonderstricken he resolved to know more of the "Hellish Black Art" (*Teuflische Schwarzkunst*). His curiosity ended by his becoming an apprentice to the business.

Great was the surprise of the brethren and devout sisters when they learned of the defection of this dear brother, who had thus far stood high in the meeting, he even having been a serving brother at the annual Love Feasts.

Private admonitions were given to divert him from his evil course, friends and relations pleaded with him in vain to retrace his steps ere it would be too late, and his soul be forever lost beyond redemption. The pictured cherubim and angels in a golden Jerusalem, had less charms for him than the comely commonplace country maiden posing before his camera. The mysteries of the dark room had greater interest for him than the prospective bright realms of bliss. He stood steadfast in his devotion to photography, to the great sorrow of his friends and relations.

The climax, however, of the matter was yet to come, when the wicked, stubborn brother went so far as to open a regular photograph studio for business right in the midst of the Dunker community in which he had been born and raised. In the show-case, filled with attractive specimens, obtained through the aid of a city stock house, were to be seen female portraits, cabinet vignettes,—even the features were exposed, without the modest shading of the conventional Dunker scoop bonnet. The idea of exposing a lady's portrait, showing bangs, frizzes or elaborate hair-dressing was too much for the worthy elders.

It would have been bad enough to expose the portrait of a wicked man, who would so far forget himself and the law as to have his picture taken, but to show a woman's portrait without the customary bonnet that projected ten inches out beyond the face, and had a decent curtain twelve inches long down the back

to hide the neck of the wearer, was held to be an attempt to break down the moral code which had been established by the original founders almost two centuries ago, and would never be tolerated in so staid a community.

Consequently the church authorities without delay undertook to pull the offender "over the coals," as he expresses it, and at the same time save the soul of the culprit, protect the morals of the community, and stamp out the black art of photography throughout their Church. The council ended by disciplining the offender. This was eight years ago, and it was not until last month (May, 1894) that the case was settled in favor of photography, the kiss of peace again given to the offender, and the hand of fellowship extended, when the reconciliation was complete.

So from now on this brother, the first, and thus far the only photographer within the Dunker church, and whose studio is located in the garden county of Pennsylvania, is privileged to make all the pictures by photography he wants to, without affecting his standing as a brother in the church, or at the risk of imperiling his soul's salvation.

It is curious to note the ground upon which the worthy Dunkers based their action in reversing their original decision,—after a prayerful struggle during the past eight years.

It was argued by the progressive faction that, "As the Lord gives us the light, and as the new pictures called photographs were, it is honestly stated, produced solely by the action of light, It certainly cannot be against the Lord's will, or he would not permit his greatest emanation to transgress his commands. That from time immemorial light had always cast a shadow, and that the new things called photographs were actually nothing but shadows. It was the consensus of the council that it could not be a grievous or deadly sin to make photographs, provided it would be done within the bounds of morality as decided upon by the rulers of the church and the land. Therefore permission was extended to Brother M——— to engage in the undertaking—holding himself subject to the discipline of the church council.

Brother M———'s studio is now located in the midst of one of the strongest communities of these plain, good old-fashioned people within the state,—people who cling to their old customs, religious and social, as they do to the German language. Strictly moral, law-abiding, conscientious and peaceful, their conservatism often bars what we would call modern progress. However, with all their peculiarities it will be difficult to find better American citizens than these same German Dunkers and similar sects which emanate, at least secondarily, from provincial Pennsylvania.

Brother M——— has our best wishes for his success; the pernacity with which he has clung to both his church and photography, and his subsequent victory for the art science, entitle him to the kind consideration and thanks of the whole guild of photographic devotees.

Making Paper Adhere to Metal.—A recently discovered method of making paper adhere to metal is so successful that after application it is next to impossible to remove the smallest portion of the paper without entirely destroying it. The invention is particularly adapted for the purpose of fitting metal plates at the back of lithographs, engravings, and designs of various kinds, additional value being given to it by the fact that atmospheric conditions cannot affect it. Experiments have proved that all acids possess the properties necessary for this purpose, though varying in degree, but the best agent is hydrochloric acid mixed with an equal quantity of water to which has been added a little oxide of zinc, added immediately after the effervescing action has taken place. The plate of metal is coated with this compound, and after being dried carefully is covered with fine coach varnish. So prepared, the plate is placed in a drying oven with a temperature of about 30° C for, say, twenty minutes, by which time the varnish will have almost entirely lost its adhesive power. Carefully place the sheet of paper intended for use on the prepared surface and submit it to strong pressure. The result will be adhesion of the most perfect kind. The method may be applied with advantage to mounting collotype blocks by a pellicular process.—*Optician.*

A Professional Hint.—It is an excellent plan, according to a noted photographer, for the sitter to powder heavily so that the white is clearly visible. This will give a smooth and satiny finish to the photograph.

SUITABLE RETOUCHING SURFACES.

WE have of late heard of so many complaints from what may be termed outside retouching establishments that they are supplied with negatives which cannot have justice done to them on account of their poor and uneven surfaces, that it may be useful to some of our readers to point ont some desirable conditions in this direction. We are not about to write a disquisition upon retouching merely upon a point of practical photography not bearing on this work alone, as it also applies to other considerations. To be able to retouch to perfection, the surface to be worked upon must bear as close a resemblance to a piece of ivory prepared for painting upon as can possibly be produced. This is little more than stating that the surface must be perfectly even and quite free from inequalities. Further, a negative possessing such a surface is also best suited for many others—notably for enlarging from, for transparency-producing, and for the rendering of minute detail generally. The requirements are connected both with varnished and non-varnished surfaces, for, as is well known, some retouchers prefer to work on the film suitably prepared to receive pencil, while others choose to stipple or hatch upon the varnish. The latter, again, are divided; a varnish which will permit the application of retouching without the intervention of "medium" or abrading being the choice of some retouchers, while others, again, will have a hard varnish, to be afterwards prepared by either abrasion, or a thin coating of medium, to receive the penciling. But, whichever mode is adopted, if delicate work is to be done, the surface must be even.

The advantage of working on the film direct is that there is greater probability of a suitable and even surface, seeing that whatever unevenness may be present upon it is generally intensified after varnishing; and, beyond this, the varnished surface may of itself possess unevenness. The disadvantage of this method is, that sometimes the retouching — the result, perhaps, of hours of labor—may be slightly or seriously disturbed dnring the after-varnishing. The counterbalancing gain is, however,

very great. The same retouching, once protected by varnish, is secure from after-injury, no matter how many prints are required from the negative; and, if it be slightly stirred during the varnishing, a few after-touches will generally suffice to put it right.

When we come to a consideration of retouching done in the first instance upon a varnished film, the first advantage that strikes us is that, in case of alteration, it is easy to remove or alter any portion of the penciling, while with film-retouching the power to remove it involves obtaining a print from an unvarnished plate, which is always to be deprecated in view of a possible setting off of the silver, and consequent injury of the negative. However, many workers prefer this plan, and the only remaining difficulty is the protection, by a second coat of varnish, of the work of the retoucher. Few, if any, mediums used for the purpose may be relied upon to a complete certainty that they will not cause the retouching either to float away altogether, or at least to move and blur in parts. Yet to leave the retouching unprotected means to stand the chance of finding it, after a number of prints have been taken, so specked and soiled as to need patching by the retoucher. This is generally the case if the negative be one that is put away and liable to be needed from time to time.

There is one very important and little-noticed peculiarity which varnished films are liable to that we may here draw attention to. When using a hard resistant varnish, if, in course of use and its having become too thick, it be thinned with spirit beyond a certain limit, it seems liable to become more resistant, and the usual treatment with medium fails to give a surface that will take the pencil properly.

After thus fully discussing the various modes of preparing the negative for the retoucher, we now return to the condition of its surface. The great and most common source of unevenness comes from copious working with unfiltered water. This, which sometimes may be unavoidable, should always be followed by a gentle cleansing of the surface by a pledget of wet cotton-wool, followed by a flush with clean water. It is remarkable how great with some waters is the amount of "grittiness" of surface the negative may exhibit.

Another cause that we do not remember having seen noted is in the use of the acid fixing bath. Sometimes, when this is used for the first time, a kind of deposit is produced upon the surface of the film which we have seen attain the dimensions of an absolute scum. Care, therefore, should always be taken, when so using the fixing bath, to note whether this appearance be present or not. It is, however, also removable by the cotton-wool, but it needs considerable friction.

The use of backed plates when a pigment is employed is very liable to cause a rough surface through deposit of pigment particles, unless the rag be well rubbed after washing, and the more is this probable, seeing that in the dark room this deposit might easily escape attention.

Finally we must speak of the varnishing. It is absolutely necessary, if a pure even surface is required, that the varnish should be continually filtered. The usual plan with careful workers is to use one bottle to varnish from, and another provided with a filtering funnel to receive the overflow from the plate. By this means a limpid clear solution is always available for every negative. In conclusion, if we were to put our own view as to how the requirements as to a suitable retouching surface should be ensured, we would say, Cleanse and wash every negative after its washing in running water, retouch on a suitably prepared film, choosing, if possible, a medium that the varnish will not touch, and give a final varnish to protect the pencilling from future injury by abrasion or absorption of dusty or fluffy particles. —*British Journal of Photography.*

Employ your time well.

Don't give a drowning man the icy end of a plank.

He that is good at making excuses is seldom good for anything else. —*Franklin.*

To consider, Is this man of our own or an alien? is a mark of little-minded persons; but the whole earth is of kin to the generous hearted.—*Panchatantra.*

A PROFESSIONAL TO PROFESSIONALS.*

BY JOHN STUART.

I SHOULD like to say a few words to my professional brethren. We are all feeling the hard times, and one often hears that photography is done. That I do not believe; but it will be done if you think nothing better can be done than fold your hands and call out, "Hard times." No; you must stand to work, see where you are behind, if there are others taking the butter from your bread. If you cannot lead, you surely can, at least, follow. There is never a photograph comes into our hands that something cannot be learned from it, if it should only be what to avoid. When looking around the show-cases of Glasgow, I often feel proud that I belong to such a city, and one of the members of the black art; for in no town do we see a higher standard of good photographic work. Still, there is much to deplore. Photographs in soot and whitewash, with many good characteristics of art feeling; others of the Henry Irving type, without the Henry Irving; others with faces such as one sees on barbers' blocks in their windows.

I remember once a famous photographer showing me the photograph of a lady, and asking me to guess her age. In my innocence I replied, "About forty." "Ah, well, you are wrong, Stuart, my boy, that lady is close on seventy!" "Well, the more shame to you!" was all I could say. I do trust that the time will soon come when the man at the camera will be the photographer and not the retoucher. Many now express themselves as dissatisfied that all the beautiful, natural, and characteristic markings of the face should be obliterated. Gentlemen, let us have the truth; not the vulgar truth, but some semblance of it. The retoucher's work should never go farther than the toning down of the hardest lines, but not the entire obliteration of them.

* Abstract of President's Address to Glasgow and West of Scotland Photographic Association.

There is just one other matter I should like to draw attention to, and I am done. It is that of the young man now starting to learn our art. If you think you will ever be an artist in the best sense of the word, it is not to be brought about without much labor and training. There are so many departments that there is considerable difficulty in advising the exact line to follow. Go to the School of Art at least two nights every week, attend the lectures of, say, Professor Mills, who will give you an insight into the various processes from a chemical and scientific point of view, as also some of the processes of mechanical photography. I hope the time is not far distant when every boy leaving school will have learned chemistry, how to handle tools, as also freehand drawing. The following illustration may serve to emphasise my remarks, and to show you how far back some of the lads of to-day are who make up their minds to study photography as a means of livelihood.

Some time ago a young lad applied to me for a situation as under-assistant. He had been about two years in a photographic studio—and will you believe it?—he had never developed a plate, neither had he toned or fixed a print, nor had he ever made up a developer or toning bath. He could put a piece of paper into a printing frame, watch it and take it out when ready, but beyond this his knowledge of photography was a blank obscurity; and as to scruples and grains they were out of his knowledge, and yet this lad had passed the Sixth Standard. If our future photographers are made of this stuff, what can we expect? I say, young men, you have hard work before you, and it will only be by diligent attention to all that is passing that you will ever come to anything. Study the journals, and never be without one at least of the many annuals and year-books. It is the custom to hang up Scripture texts in bedrooms. I think it would not be inappropriate for young men in any branch of business, but in photography especially, to write in large letters and hang up in their rooms the motto, "The cream always comes to the top."

This world is given as a prize for men in earnest.—*F. W. Robertson.*

THE STUDY OF PORTRAITURE.

IT is an indisputable fact that the bulk of professional photographers live by portraiture, and it is also indisputable that the rank and file are too prone to adopt stereotyped positions and methods of lighting. Things are not quite so bad in this respect as they were a few decades back, for the pillar and curtain and the balustrade, without which a portrait could hardly be called complete, have gone their way, or, at any rate, have been relegated to fifth-rate studios, where clients are not too particular to mark what is done amiss in the way of anachronisms. But still there is something wanting in the average cabinet photograph. If it is what is called a good likeness, the owner is satisfied and does not regard other shortcomings; very often indeed he has not the art feeling which would cause him instinctively to find that anything is wrong, and in this way a dead level is sustained which is open to much improvement. With the leading photographers it is different, and here, indeed, lies the secret of their success. They have learnt to study each face as a painter does, and to make the best picture possible of the subject presented to them.

We have always held that the key to successful photographic portraiture lies in a study of the works of painters who have devoted their lives to depicting the human face and form, and who have given such abundant evidence of their ability. By careful examination of such pictures, helped by diagrammatic notes and comments regarding pose and lighting, a photographer is able to lay by a store of valuable facts which cannot but be very helpful to him in his every-day work. We know of no better school for such studies than the present exhibition of "Fair Women" at the Grafton Gallery.

If we take the word "fair" in its old sense of "beautiful," it must at once be admitted that many of the ladies whose portraits are here exhibited can hardly lay claim to that distinction. In many cases fine features are hidden under such monstrosities in the way of head-gear and apparel, that one must call them quaint and interesting rather than lovely, and here again the photo-

grapher can learn a lesson. For he will see how much natural forms are distorted and regularity of feature spoilt by such outrageous renderings of dress as occasionally meet with temporary recognition, and he will do his best to suppress such enemies to all that is picturesque and artistic. The exhibition is not only valuable as an unique collection of works of the first artists, but it is also an epitome of the fashions of the last four centuries, and in a manner an illustrated history of famous women so far as that period is concerned. The examples of portraiture are not confined to English artists, but include many fine pictures from both the French and Dutch schools.

In considering this exhibition from a photographer's point of view, we were struck with one circumstance which we think that photographers might make a note of. Many of the portraits are taken in character. For instance, we have Queen Elizabeth portrayed in the likeness of Diana; another lady as Miranda; that favorite subject, of which there are two quite different examples here, "Mrs. Siddons as the Tragic Muse"; another lady figures as "Hebe," and so on. Now, why should not the modern photographer encourage a revival of this custom? It would be by no means difficult to persuade a lady that she would look well in some particular *rôle;* indeed the artistic mind is prone enough to think when he sees a face of any particular type to imagine how suited it is to portray a certain poetic or historic character. At present the idea is carried out often enough in the portraits of actresses, but we see no reason why the custom should stop here. If one or two photographers were to suggest this new departure, and could show specimens in support of their proposals, the idea would soon take root, and if it became a fashion it might lead to a very brisk revival of business.

Some may probably scout this idea of borrowing hints from old pictures as an Utopian one, and will doubt the possibility of carrying in the mind for an indefinite period the pose of more than two or three figures. But in these days of cheap reproductive processes there is no need to tax the memory. Even these very portraits to which we are referring are many of them engraved, and are consequently greeted by the visitor as old friends.

The treasures of our National Gallery have long ago been photographed, and a copy of any picture can be obtained for a small sum. The eagerness with which publishers compete with one another to produce the copies of pictures hung at the Academy and other modern exhibitions again proves that there is little excuse for those who complain of the want of models to work from. It is, indeed, within the power of anyone who is thoroughly alive to the advantages of art education to gather together for reference a collection of examples by the first masters. Let such a collecion take the form of a scrapbook, which shall lie on the table of the reception room, so that clients can look through it and give the photographer an idea of the kind of picture which is preferred. Of course, some ludicrous episodes would occur. The matron would occasionally desire to figure as the sylph, and the man of small proportions as Ajax or Hercules. But the results could hardly be more ludicrous than certain studio photographs that some of us have seen, which the plan proposed would do something towards confiscating.—*The Photographic News.*

Test for Free Sulphur.—A new test is described by Herr J. C. Gil in a German technical journal. On adding an alkali polysulphide or a solution of sulphur in caustic alkali to hot alcohol which has been boiled long enough for all air to be expelled, a blue color is gradually developed. On cooling the blue color disappears, but is restored by reheating if care be taken to exclude oxygen or any substance which decomposes polysulphides. So small a quantity as two-fifths of a milligramme of hepar sulphuris will color fifty cubic centimetres of ninety-six per cent. alcohol. To use the test for the detection of free sulphur, the substance is added to boiling alcohol containing a trace of caustic potash. It is evident that there is here a very simple mode of examining prints for the presence of free sulphur, which by many is supposed to be one condition in which that element is found in prints "toned by sulphurisation," whatever that mysterious operation may eventually prove to be.—*The British Journal of Photography.*

As gold is tried by the furnace, and the baser metal shown, so the hollow-hearted friend is known by adversity.

A THEORY OF VISION.

A VERY interesting and suggestive discourse was given at the Royal Institution, last Friday evening, by Professor Lodge. Hertzian radiation was the subject dealt with. It is a subject of commercial interest mainly because of the suitability of these waves for signalling purposes. We need not, however, enter into general explanations of these matters here. It is sufficient to mention that a large Hertzian oscillator was shown which radiated wave motion—for a very short period of time—at the rate of about a hundred horse power. (It will be remembered that the sun's radiation, at the sun's surface, corresponds to about seven thousand horse power per square foot.) Professor Lodge thinks that the range within which the activity of such an electric radiator as this could be detected is, at present, about half a mile. The general features of the subject of electric surgings were explained; and resonance, reflection, refraction, and polarisation of the Hertzian rays were demonstrated. These demonstrations suffered a good deal from accidental reflections, and probably also, it was explained, from stray radiations of the same kind as those investigated, set up, perhaps, by telegraphing, distant thunder storms, etc. A piece of freshly cleaned zinc, negatively charged and placed in connection with an electroscope, was shown to be a detector of ultra-violet radiation. Such an appliance might be described as an actinoscope. As detectors of Hertzian radiation, the virtues of "bad contacts," formed by conductors having oxidisable surfaces, were shown. But the vagaries of bad contacts in general are so well known that little surprise can be felt at the failure of some of the experiments, which of course had to be very hastily prepared. It was remarked by Professor Lodge that a mirror placed one quarter wave length from a source is favorable to radiation, just as it is also to acoustic resonance — the explanation being, of course, that incipient oscillations are favored by the interference of the reflected waves.

The main point of the lecture was the suggestion of a new theory of vision—a theory in which the visual mechanism of the eye is likened to the combination of nerve fibre (as exemplified by,

say, the nerve of a frog's leg), a galvanic battery, and a bad joint. This model of a visually perceptive system accords, said the lecturer, very closely with the sensation of blackness is regarded as a positive stimulus. We may observe that there is no avoiding the fact, shown by Bell and Kuhne, that chemical change is induced in the retina by light. And that such change involves the production of electric currents has been made tolerably clear by Holmgrem, and Dewar and McKendrick. We infer, therefore, that the new mechanical theory of Professor Lodge may be most accurately understood in *conjunction* with the old chemical theory of visual perception. Light may be supposed to induce, in the retina, chemical change dependent chiefly upon its color, and change of electrical resistance dependently chiefly upon its intensity. The duration of the mechanical stimulus, on which dimunition of electrical resistance depends, corresponds, according to Professor Lodge, with that of the persistence of vision. On these assumptions, however, the retinal persistence should be equal for every colored light of equal luminosity.

However these things may be, it is most probable that there are close analogies between the eye and some *one* of the other detectors of radiation—radioscopes we may call them—which can be mechanically constructed. Among these Professor Lodge classes as *chemical*—(1) the photographic plate, (2) explosive gases, (3) photo-electric cells. *Thermal*—(1) Thermopyle, (2) Rubens and Ritter's bolometer, (3) Gregory's expanding wire, (4) Klemencic's thermal junction. *Electrical.*—(1) Hertz's spark, (2) Lodge's air gap and arc, (3) Dragoumis' vacuum tube, (4) Fitzgerald's galvanometer, (5) Boltzmann's air gap and electroscope, (6) Warburg and Zehnder's trigger tube. *Mechanical.*—(1) Blyth and Bjerknes' electrometer. (2) Boy's suspended wires. *Microphonic*—(1) Minchin's impulsion cell, (2) Branley and Croft's filings contact, (3) Heyes and Lodge's coherer. The list is not, of course, a complete one. Professor Lodge mentioned the selenium resistance as being omitted from it. The sensation of temperature might be included, as a physiological detector which is distinct from vision. But this is only one of very numerous thermal methods that could be cited. Electric eels and other

creatures may very possibly be sensitive to Hertzian waves. And among "mechanical" detectors, Clark Maxwell's disc, suspended in a perfect vacuum, certainly deserves the first place. Doubtless it is in this way that the sun's radiation is "detected" so remarkably by cometary matter. In conclusion, it may be affirmed that all emitters of radiation can act as detectors thereof, although the contrary proposition does not hold true.—*Optician.*

THE PRIMARY COLOR THEORY IN JAPAN.

ACCORDING to the statement by Mr. Tokuno concerning the pigments used in characteristically Japanese color-printing, *i. e.*, blue, yellow, and red, besides black and white, it would seem as if the whole system of this kind of printing were based upon the old three-color theory, which prevailed also with the early chromochalcographic and chromolithographic printers of Europe. It is nevertheless true that the Japanese printers do not, at present at least, produce the so-called secondary colors, green, orange, violet, by printing the so-called primaries, *i. e.*, blue and yellow for green, yellow and red for orange, and red and blue for violet over one another. Wherever these "secondaries" are needed—and the same observation holds good also for the "tertiaries"—they are printed by themselves, although the "primaries" which enter into them may occur in the same picture. I am again indebted to Prof. Fenollosa for having called my attention to the fact that the printing of the "primaries" over one another to produce the "secondaries" does, indeed, occur in the earlier work of the Japanese printers, but it is evident that it has now been abandoned. As subdued and broken colors were mainly used in the earlier Japanese color-prints, while the modern show a decided preference for brilliant and even glaring coloring, it is quite likely that this printing of the "primaries" over one another, which with us is considered a decided advantage, more especially in cheaper and simpler grades of work, as it saves time and money, was given up, even in such work as the printing of pictures and fans, for the sake of the more brilliant effects which can be produced by mixing the pigments themselves.

DR. DALLINGER ON THE GENESIS OF THE LENS AND THE MICROSCOPE.

IT was a popular misconception that Archimedes and Ptolomy were acquainted with the properties of lenses; the former left evidence that he knew something of the refraction of light on entering the plane surface of water, but neither had any idea of the influence of curved surfaces upon refraction. The peculiarities of "short sight" were touched upon by Aristotle and a Greek medico named Alexander, but from that time until the Renaissance there was not a single reference in literature to the single lens. Mr. Layard found in the remains of the palace of Nimrod a plano-convex piece of crystal which was supposed to be a lens, but Dr. Dallinger, exhibiting enlarged photographs of this object on the screen, pointed out features about it which must have utterly unfitted it for optical purposes. What its use was has been pretty clearly indicated by later Egyptian "finds" of the same kind; it was clearly a decorative boss used by the Egyptian architects, who utilized quartz, onyx, cornelian, and other richly-colored stones in this way. In 1276 Roger Bacon spoke of a lens as an "instrument useful to old men and others" with weak sight, who might by this means see letters sufficiently enlarged to read them. From this period onward the use of the lens in spectacles became common. One of Raffael's portraits, painted about 1515, shows the Pope with a hand lens, used probably for examining some fine missal or other. The passage from lenses of shallow curvature and long focus to those of sharper curvature and shorter focus steadily progressed; but it was not until 1610 that anything approximating to the compound microscope was constructed, and it is almost certain that Galileo was the first to accomplish such a construction. In this sense, therefore, the microscope is at once old and modern. It was a slow process, the evolution of the modern instrument from the point of Galileo to the stage to which it was brought by Lister in 1830. But progress has been rapid within our own generation. Lister's achromatic microscope has been brought by

rapid strides to the height now touched in the "homogeneous" system, which, in the masterly hands of Abbe, of Jena, has become one of the most valuable aids to research that science could possibly possess. The microscope might be said to have passed into scientific value during the Victorian era.

PRACTICAL COLLOTYPE PRINTING.

WILLIAM A. DONOVAN, who delivered the third of the course of lectures on practical collotype printing, in the Typographical Hall, Maxwell street, Glasgow, is reported in the Glasgow *Echo*. He gave a description and exhibition of the boiler in which the gelatine solution for putting on the plates was melted. It was a simple boiler made of tin, with a false bottom in it. The boiler was so constructed that the cover could be taken off without interfering with the temperature. He then described the stove in which the plates were dried after being gelatined. It is a rectangular box, with bars of iron running across it at right angles for resting plates upon during preparation. On the top of the stove is a thermometer for gauging the temperature of the heat within. He then gave an elaborate description of the glass plates used for printing. He used ordinary polished plate-glass, and he did not see the necessity for having the best material. Some years ago they were working with plates one and one-half inches thick, but he did not think, at present, there was any need for such thickness. The Germans had been in the habit of working with plates one-quarter of an inch thick in machine work. He believed glass plates three-quarters of an inch thick were sufficient for machine work. He had even worked with one-half inch plates. It was a general custom of collotypers to grind these plates with the finest flour emery in a similar manner in which stones were ground for lithographic work. Great care was required in grinding plates, for, if the emery was not purely reduced, there was always the risk to be run of scratching them. The early workers in collo-

type printing had great difficulty in keeping the films on the plates during printing operations. When the roller was put across the plate little blisters would begin to rise and the plate would be spoiled. After considerable trouble and a great deal of expense they managed to discover the means of causing the printing film to cling to the glass surface. This remedy was the medium which, by a chemical change, so united the printing film with glass that it held firmly. Early workers in copper plates did not require any such medium, as copper had an affinity with chromatized gelatine. There were two kinds of first preparations of plates which might be termed complex and simple. Under the heading of complex he would class such as had to be prepared with the stove he described. The preparation was a compound of gelatine and albumen, and the plates were coated with this, put into the stove and heated till dry in a temperature of about 10° C. After the plates were dried they were exposed to the action of diffused light, by turning them down on a blackboard. They were exposed for five, ten, or twenty minutes, according to the light. After the plate had been exposed it was taken to the dark room, and there washed with warm water. He then gave the component parts of a preparation formula. It was composed of sixty grammes of gelatine, 700 grammes of water, ten grammes of ammonium bichromate, and ten grammes of spirits. After he had prepared his solution, he filtered it by means of muslin, and levelling up the plates in the box or drying tove, he coated them, leaving them to dry in non-actinic light. The lecturer then made a few remarks on the different kinds of gelatine, but he always used Nelson's number two, because it was harder than number one, and had more lasting results. Some preferred hard gelatine for summer work, and others soft. Soft gelatine he considered was better for winter work than for summer work.

A good business is to be done almost anywhere, by men who will keep up with the times. Negatives should be made good, proper and well built up at the time, and not trust to the retoucher.

ETHER SATURATORS.

A COMMUNICATION to the Photographic Society of Philadelphia by Mr. Frederic E. Ives, read at the Stated Meeting, June 13th, 1894:—

When I patented the method of producing the lime-light, which consists in passing a portion of the oxygen through a chamber having a porous filling saturated with ether or benzine in order safely to obtain a substitute for hydrogen or coal-gas, I made certain claims for the ether light and porous saturator which were soon generally recognized in this country, but have always been disputed by some well-known authorities in England. One was that with the saturators made and used according to my instructions, the oxygen passing through the saturator was so completely saturated with ether vapor as to be non-explosive, so that it could be turned out exactly like a coal-gas flame, without danger of snapping back, even at the close of an evening's exhibition; another, that with the same pressure of oxygen the light was better than with coal-gas, the consumption of oxygen being proportionately greater, the incandescent spot on the lime proportionately smaller. These facts were not only proved by my own experiments, but were confirmed in tests made by professional lime-light operators, and also by most careful quantitative tests made by a noted physicist in the physical laboratory of one of the best known of American universities, employing the most approved gas meters and photometers, and checking the possible errors by interchange of jets, etc. Under the conditions which I laid down, and with such jets as I employed and recommended, we found it impossible to obtain any other results—all of the tests turned out alike. English writers, with a reputation for honesty and capability which their work in other directions evidently sustained, denied that the porous saturator could be relied upon to produce a non-explosive mixture of oxygen and ether vapor under ordinary conditions, or that the light was even better than the oxyhydrogen with the same jets and oxygen pressure, or that the incandescent spot was smaller for a given

amount of light. The claims that I made are not even now generally recognized in England, where, although everybody who uses the ether light has finally adopted the porous saturator, which has assumed new forms, it is almost invariably used in connection with a source of heat to assist the vaporization of the ether, and, I believe, nobody admits that the light is quite equal to that obtained with the two gases. I was a good deal puzzled and somewhat discouraged to find an apparent exception to the rule that "truth is mighty," etc., until I had an opportunity to make some tests with the ether light in England, with English jets and saturators. These tests resulted exactly as described by the English writers. At the usual temperature of a lecture-hall in London an ordinary ether saturator, not kept warm by some special means, would not, after an hour or two, give a non-explosive mixture of oxygen and ether vapor, the incandescent spot on the lime was quite as large, if not larger, than with the two gases, and the light was distinctly inferior. That was the first time I ever had such an experience with the ether light, and the object of this communication is to point out the reason for the differences observed, and to make some further observations upon the subject.

Briefly, then, the ether saturator does not always saturate in England without being warmed, because the usual temperature of lecture-halls is quite 10 degrees lower there than here. This difficulty could have been got over by substituting for sulphuric ether the lighter petroleum ether, the use of which I introduced here; but petroleum ether is not in such common use, nor so easily obtained, in England, and English operators do quite right to use "warm-air" saturators with sulphuric ether at prevailing temperatures. The English operators generally employ jets having large mixing chambers filled with gauze or pumice, and having conical brass nipples. With such a jet I found it impossible to obtain a properly focussed flame, the gases spreading out over a large surface of lime, and making a very diffused incandescent spot. My own jets have a small mixing chamber, but no obstruction of any kind behind the nipple, which is a steel gun nipple as used by many manufacturers in this country, and the

flame focusses to such a small point that about 30 per cent. of the light is lost if the lime is no closer to the nipple than is necessary to give a first-class light with coal-gas. With these jets, and the lime turning so close to the nipple that it almost touches, the ether light, with the same pressure of gas, is better than the oxyhydrogen, and the incandescent spot is smaller, with a greater consumption of oxygen. The differences have been explained and both of us were right, both were wrong.

The earliest form of "warm-air" porous saturator introduced in England, that of Albert Scott, possesses no advantage over the "cold-air" saturator for use in this country, but is more troublesome to manage, and possesses the disadvantage that no means are provided for removing the porous filling, which should be dried out occasionally when used with sulphuric ether. Some of the more recent "warm-air" saturators, however, possess one feature which might advantageously be introduced into this country; they go directly into the lantern, where they are not only certain to be kept warm even in the coldest room, or out-of-doors on a winter's night, but they are more compact and less in the way than the tubular form. None of them are provided with means for removing the porous filling, which, as I said before, is an objection for use with sulphuric ether, but it need be no objection to their use in a country where suitable petroleum ether, both better and cheaper than sulphuric ether for the purpose, can be readily obtained. In my opinion the best of these inside-lantern saturators yet produced is that of Perken, Son & Rayment, Oxford Street, London. It is really an Ives' saturator, made square instead of tubular, but without the removable end, and has an upright rod for attaching the jet. It will not become unduly heated in the lantern, as some of the others might, and it is a model of compactness and convenience. I think so much of it that I have adopted it for my own use, and modified my folding lantern so that it fits into it for carrying. I now show you the folding lantern, as substantially made as the largest you can find, with 11-inch focus objective and extension for long-distance work, ether saturator, jet, tubing, and connections complete, and measuring only 6½ by 7½ by 10½ inches outside.

In conclusion, a word about petroleum ether. Before the days of the Standard Oil monopoly, purified gasoline, known as petroleum ether, could only be obtained from a few dealers, in bottles, at about half the cost of sulphuric ether. Now, however, thanks to the "monopoly," if I am correctly informed, all of the gasoline sold is quite free from gummy matter and suitable for use in the ether saturator.

An Embryo Photographer.—Among the literary curiosities in possession of the editor is the following letter from a would-be photographer. It was received in the usual course of business by the publishers of the AMERICAN JOURNAL OF PHOTOGRAPHY, and was, no doubt, sent in good faith by its writer, who expects to run a race with the professional breadwinner in his native place:

"DEAR SIR:—You will find enclosed 50 cents in stamps for which please send the book "Dry Plate Making for Amateurs by return mail." I have been offered a 4x5 tripod camera 3 holders and Blairs R R lens for $6.00.

"Do you think I could do better work with it than the 5x7 Waterbury you have on your bargain list. And at 10 ft. which lens will make the largest heads and what is focus of each Holmes Booth and Hayden or Harrison. Which of these lens will make the largest heads and what size on a 4x5 plate could not one of the combination in the above lenses be used to make views.

"What are the diameters of the largest heads you can make with the 5x7 Waterbury and 5x8 R. O. & Co. lenses you quote on bargain list. Could you get me a second-hand 4x5 camera tripod and good lens for $5.00.

"I have a 4x5 hand camera "The Rattler" which I bought last fall for $5.00 it is in good condition only one of the holder slides has a corner torn off I would like to sell it and get a portrait camera.

"If I get $8 or $9 worth of goods from you how much will you give me for it.

"Is this a good developer for portraits:

Brogallic acid	5 parts.
Sulphuric acid	2 "
Concentrated ammonia	16 "
Bromide potassium	8 "

"If I can get the lone of some money I will get a camera and go into the photograph business next week (I think I can get it.)

Yours truly,

OUR ILLUSTRATIONS.

FOR this month we present to our readers reproductions from two of Mr. Wm. H. Rau's superb photographs made during his late visit to the Dominion of Canada.

This series of photographs has been on exhibition at the room of the Photographic Society of Philadelphia, from May 9th, and has attracted such wide attention that they will remain on the walls for some time to come.

At the late meeting of the society held June 13th, 1894, the following report was submitted by the chairman of the special committee.

To the Photographic Society of Philadelphia:

Your Committee appointed at the May meeting of the Society to consider what means should be taken to show to Mr. William H. Rau the appreciation, by his fellow-members, of the technical skill and artistic beauty of the set of lantern slides of views in the western parts of the United States and Dominion of Canada, and of the loan collection of prints in British Columbia, which for the past month have graced the walls of our meeting-room, respectfully report:

That they have given careful consideration to the matter referred to them. The time occupied by the tour was about eight weeks. The whole number of exposures made by Mr. Rau on this trip was 7½ dozen 11 by 14 and 20 doxen 6½ by 8½ plates, of which 7 dozen 11 by 14 and about 16 dozen 6½ by 8½ produced satisfactory negatives.

Your committee believes that this was a most unusual achievement in photography, in view of the very great distance traveled, being an average of nearly 1000 miles a week, when the universal excellence of the technique of the pictures is considered, But this collection of views is the more commendable because, in addition, in our estimation it embraces a selection of pictures exhibiting true artistic feeling and a keen appreciation of the canons of composition, the proper application of which makes the contrast between a photograph and a photographic work of art. We believe that the great majority of Mr. Rau's views referred to above come up to this high ideal, and we therefore recommend that the Society adopt the following preamble and resolutions:—

WHEREAS, Our fellow-member, Mr. Wm. H. Rau, has recently exhibited to the Society an unusually beautiful set of lantern slides, and also a collection of prints, all from negatives taken by himself last summer in British Columbia and the northwestern part of the United States, combining alike the highest grade of technical excellence with artistic taste and skill of the highest grade; therefore be it

Resolved, that the Photographic Society of Philadelphia award to Mr. Rau a silver medal as a token of its appreciation of his work for the advancement of photography.

All of which is respectfully submitted.

(Signed) GEORGE VAUX, JR.,
H. PARKER ROLFE,
EDMUND STIRLING,
Committee.

The report was accepted and the resolution unanimously adopted.

The above honor is well merited, and the medal of the Society is worthily bestowed.

We congratulate Mr. William H. Rau upon his success in Marine and Landscape photography. By his own efforts he has reached a position in the photographic field second to none in the United States.

Rembrandt Effects in Photography.—In answer to a valued correspondent who inquires as to what is meant by a Rembrandt effect, we will state that the so-called Rembrandt effects in portraiture are brought about by the use of one-fourth light and three-fourths shade. Photographically these effects are obtained by various means in lighting the subject. Many beautiful specimens have been shown by well known British exhibitors, printed upon a mat surface in platinum and carbon. The well known Austrian worker has lately formulated the following method for obtaining Rembrandt effects by aid of Blitz-pulver. The camera is to be placed directly in front of the subject, the flash apparatus is placed to one side, a large screen covered with paper is placed in front of the flash apparatus so as to diffuse the brilliant light of the Blitz-pulver. Sideways and a little to the rear of the subject a mirror is to be placed so as to reflect the light of the Blitz-pulver directly upon the sitter. To prevent any light from the mirror entering the camera, the lens is to be shielded by a long pasteboard hood. But little experiment will be necessary to give the operator the proper position for flash apparatus and mirror.

Photographers should do their own retouching, and they ought to have a knowledge of the face, and while at work should have a print before them.

Photographic Hints and Formulæ.

Favorite English Developers.—Pyro-Ammonia.

STOCK SOLUTION (10 per cent.).

Pyrogallic acid	480 grains.
Bromide of ammonium	240 grains.
*Metabisulphite of potassium	480 grains.
Distilled water to make up	10 fluid ozs.

Dissolve the metabisulphite in part of the water, then add the other ingredients, and make up to bulk with water.

A. Stock solution	300 minims.
Distilled water to make up	10 fluid ozs.
B. Liq. ammonia (·880)	70 minims.
Distilled water to make up	10 fluid ozs.

Use equal parts of A and B mixed at time of developing.

Pyro-Soda.—

A. Pyrogallic acid	60 grains.
*Metabisulphite of potassium	5 grains.
Distilled water to make up	10 fluid ozs.
B. Washing soda	600 grains.
Sulphite of soda	800 grains.
Distilled water to make up	10 fluid ozs.

Use equal parts of A and B mixed at time of developing.

FIXING SOLUTION.—Hyposulphite of soda, 1000 grains; water, to make up 10 fluid ozs.

TO CORRECT ERRORS IN EXPOSURE.—If underexposed, use a larger proportion of B; if overexposed, decrease the proportion of B, and add a few drops of a 10 per cent. solution of bromide.—*Photographic Answers.*

Carbon work.—Negatives for carbon work, more especially since the introduction of the rapid printing tissue, require greater density than for silver or platinum printing, and all should be varnished before use.

Castor Oil and Glycerine in Collodio-Chloride Emulsions.—Lainer considers these additions, and states that castor oil is added to prevent too rapid toning, and that 10 ccm. of a mixture of

* Metabisulphite of potassium is unequalled as a preservative of pyrogallic acid in solution. If not at hand, substitute for each grain of metabisulphite sulphuric acid ½ minim, plus sulphite of soda 2½ grains.

50 ccm. of castor oil and 100 ccm. of ether is the greatest quantity to be added to 1,000 ccm. of emulsion. Glycerine is a useful addition to some emulsions which do not otherwise give sufficient depth in printing. A simultaneous use of glycerine and castor oil prevents in many cases the rolling up of the paper whilst being kept, and during manipulations.—*E. J. W.*

Color Screens.—The following list of absorbents, with those parts of the spectrum which they let through, is given by Mr. J. S. Ames, of the Johns Hopkins University, U. S. A.:

Greenish plate glass	3300-8000
Alcohol saturated with salicylic acid	3500–8000
1 oz. water with 1 grain æsculine and 1 drop of ammonia	4100–8000
Potassium ferrocyanide solution in water	4400–8000
Fluorescine or chloride of gold	5200–8000
Chrome alum	3200–3700 and
Malachite green	4600–5200
Cobalt chloride	3400–4500
Gentian violet	3600–4600 and 6000–8000
Potassium permanganate	3800–4600 and 5800–8000
Aniline yellow	5000–8000

—*The Optician.*

Thiocarbamid for Removing Yellow Stains.—Eder reports on above, and states that he has found it of great value for removing pyro stains and preventing green fog which appears on plates and bromide prints when developed with amidol, etc. The following was used:

Water	1,000 ccm.
Hyposulphite of soda	200 g.
Thiocarbamid	15–20 g.

To this solution add

Acid sulphite lye	30 ccm.

or

Sodium bisulphite	50 g.

Prints as well as papers must be well washed prior to fixing.—*E. J. W.*

Dust on Plates.—A correspondent of *Photographic Scraps*, writes:—I had, like many others, used a dusting brush most carefully as I thought, both before exposure and before development, but still the pin holes appeared. Still unsatisfied I investigated, and took one of the dusty plates into the light, and found on it many specks of dust, which adhered to the plate in spite of the brush having been passed

over it. Seeing this, I cast about for a way of getting rid of this dust, and finally I adopted a strip of fine velvet fitted to a straight-edge, and drew this carefully over the plate. This plan proved perfectly effective, and pinholes are a thing of the past with me. Of course the velvet must be kept perfectly clean and dry. I can quite understand, on looking back, why the soft brush did not remove all the dust; nay, more; I can readily see that it might add to rather than remove the evil, by retaining a quantity of dust, and adding it to the plate rather than taking away from it. Besides, the brush, is too soft to remove the dust which adheres to the plate, and only removes, even if clean, the loose particles. "The velvet straight-edge for cleaning off dust has been much praised, and should be an article to be included in every one's photographic outfit. Its use obviates, in ninety-nine cases out of a possible hundred, that much complained of, but too little understood, trouble, known to all photographers under the common term of pinholes."

Developer Stains on Negatives.—There is, we believe, a growing desire with many photographers to revert to the kind of negative having the slight stain producible by pyro-development either without sulphite or with a very small portion of that agent, such as was frequent a few years back. We have heard it stated by many operators that the "pretty" negatives yielded by the newer developers are so deceptive in their printing qualities that they are tempted to go back to negatives of pyro-like quality on that very account.

This implies that, after all, a slight yellow stain is no disadvantage, but rather the reverse in some cases.—*British Journal.*

To Recover Fogged Plates.—Solution as follows:

Chromic acid	60 grains.
Bromide of Potassium	60 "
Water	10 ounces.

and immerse the plates for five minutes, afterward wash very thoroughly, and rear up to dry.

To Print in a Background.—Some practical joker has gotten off the following on a contemporary, who prints it in good faith: "Employ a light background in taking the prints, so that when printed it appears in a plain and slightly toned paper. The figure is then painted over with some non-actinic water color, gamboge, for example, so as to protect it from the light in the second printing when the color is dry, the print is exposed behind a landscape negative, care being taken that it is not deeply printed. In washing the print prior to toning the color is removed, leaving the paper perfectly clean."

Lumiere Bromo-gelatine Dry Plates.—The Lumiere brothers have issued the following developer formulæ for their new dry plates, upon which good negatives have made with exposures of one five-hundredth part of a second at *f* 6.3.

METOL.

A.	Metol	1 part.
	Water	100 parts.
	Sulphite of soda (crystallized)	10 "
B.	Water	100 parts.
	Carbonate of potash	10 "
	or,	
	Carbonate of soda	20 parts.

The Metol is to be dissolved in the water before the sulphite is added

C.	Potassium bromide	1 part.
	Water	10 parts.

for use with normal exposure: A. 3 parts, B. 1 part, and 40 minims of C. to each ounce of developer. For snap exposures omit C. For over-exposures add up to 1 drachm of C.

AMIDOL.

	Water	100 parts.
	Sodium sulphate, C.P.	3 "
	Amidol	0.5 part.

A good plan will be, make and keep as stock solution a three-per-cent. solution of sodium sulphite, say, 1½ ounces sulphite to 50 ounces distilled water, and for developer add to 4 ounces of this, a common salt-spoonful of amidol dry. On being stired it will at once dissolve.

PYRO-CARBONATE.

A.	Sodium sulphite	3 ounces.
	Water	15 "
	Nitric acid	30 minims.
	Pyrogallic acid	1 ounce.
B.	Sodium sulphite	3 ounces.
	Sodium carbonate	4 "
	Water	15 "

For use take water 1 ounce, A. 1 drachm, B. ½ drachm.

The Eastman Kodak Company's suit against Henry M. Reichenback and others to restrain them from using certain formulas which they had become possessed of while in the employ of the Eastman Company, is decided in the Eastman Company's favor, the judgment being affirmed.

Photographic Scissors and Paste.

A Boon for Travelers and Tourists.—Mr. John Carbutt, the veteran dry plate maker who has done so much towards the practical development of photography, has now put on the market a developer in a compressed form in the shape of tabloids. These can be carried in the pocket if necessary; they take up no room, and are ever ready for use. The manufacturer states that in using this developer the exposure may be reduced one-third to one-half that usually given for pyro developer, and care should be particularly taken not to overexpose.

To readily dissolve the tabloids, place them between stiff paper and crush by rolling a bottle over them, then place with the required quantity of water in a bottle and shake until solution is completed, let stand a few minutes to settle or filter through a tuft of absorbent cotton placed in a glass funnel.

For time exposures and tentative development, dissolve two J and two C tabloids in six ounces of cold water (distilled, melted ice, or boiled city water). A few drops of a ten per cent. solution of bromide of potash may be added after detail is well started and development allowed to go on to gain density.

For instantaneous exposures dissolve three J and three C tabloids in four ounces of water; commence development in the weak solution given above, and when detail is fairly well out, transfer to the last-named solution. The development will be quite rapid, but this need not be feared; let it continue until required density is obtained, then wash and fix.

Mr. Ives, whose recent return to his native country is a matter of regret here, found a warm welcome awaiting him in Philadelphia, for the Photographfc Society there held a formal reception in his honor. It will be gratifying to friends here to know that, although Mr. Ives received medals and other honors, both in London and Vienna, he has expressed himself as valuing far more highly the recognition of his claims by Captain Abney, of whom he speaks in the most enthusiastic terms.—*Photographic News.*

Photography of the Eye.—In adverting to the resemblance of the eye, structurally, to a photographic camera, we drew attention in November, 1892, to various suggestions as to the desirability of investigating the retina photographically. We referred to the question

whether the excitation, active or merely persistent, of one colur-sense is favorable or otherwise to the sensitiveness of the other color senses; whether problems relating to the color senses, and the extent to which visual "persistence" is accompanied by surface phosphorescence, could not be most accurately determined by photographing retinal images, and what other factor can possibly be discovered by photographic retinoscopy.—*The Optician.*

A Camera Detective.—Only a few years ago a photographer was only thought of as a man who took pictures of persons simply that their friends who could not be with them all the time might at least see any minute how they looked. But now the man with the camera, or even the boy or a girl with a camera, does a good deal more than that.

Since it has become possible to take instantaneous pictures, the use of the camera has extended in every way. In England, a few weeks ago, a certain iron bridge of one of the railways was suspected of being unsafe. It looked all right, but there were some reasons why the managers were afraid of it. They could not decide themselves, and they sent up to London for a famous engineer to come and look it over.

He came, and was puzzled too, until he thought of a way to test it. He took a kodak and made a picture of the bridge with no train upon it. Then he kept his camera in position and waited for a fast train to come. Pretty soon an express came thundering on, and just as the big locomotive struck the bridge he pulled open the slide and took a second picture on the same plate that still held the first.

When the plate was examined, the picture of the train was found so much below the other as to show what the engineer and managers had feared—a dangerous droop to the bridge.—*New York Times.*

A New Light-Sensitive Iron Salt.—A remarkable modification of ferrous sulphate sensitive to light is described in a recent number of the Journal of the Russian Chemical Society. When a very weak electrical current is passed in the dark for a month or two through a thirty per cent. solution of this salt-iron electrodes being employed, a great change takes place in its physical characteristics. It becomes more intensely green in colors, and when it is exposed to light deposits a solid green color which is quite permanent if air be excluded. When analysed the solution is found to contain twice as much iron as there is in the unchanged sulphate. The explanation is that it contains a basic salt, $FeSo_4,FeO$, which decomposes on ex-

posure to light with deposition of $Fe(OH_3)$. colored green by some ferrous sulphate carried down at the time of precipitation.—*The British Journal of Photography.*

Learn a Trade and be Master of It.—Benjamin Franklin told the truth when he said that the best knowledge a man could give to his son was the mastery of a good trade. Such a man is cosmopolitan. He can make himself useful anywhere, and he can live anywhere. If it should not be necessary always to work at his trade, he feels the ability within to support himself. Between the average mechanic and the great manufacturer or merchant prince, great numbers can be found who began as mechanics, and who have taken positions by their mechanical skill fully equal to that of the average merchant, and far superior to that of most clerks and professional men. There is, as the German proverb says, "a golden bottom to handicraft." Look at the clerk, the bookkeeper, the general salesman. For one who has a fair position, there are hundreds ready to occupy the same, and fill it, perhaps, for a mere pittance. The qualifications necessary to the performance of their duties are not difficult to secure, and from this very fact not over remunerative. The man who is master of his craft has his capital safe and always at his command. In proportion to his skill the value of his stock in trade is rated. There is no danger that it will depreciate. Hence the turning away from manual employment, the reluctance to take up good solid hand work is foolish in the extreme. In the mastery of a good trade there is the guarantee of earnings sufficient to subsistence and the prospect of a competency, while in many of the other fields of labor uncertainty and scantiness of compensation are the rule. Why, then, should there be a hesitation in choosing?

RECENT PATENTS.

THE following list of patents relating to the photographic interests is specially reported by Franklin H. Hough, Solicitor of American and Foreign Patents, No. 925 F. St., Washington, D. C.:

519,247.—Camera shutter. F. L. Eiden, Warren, Pa.

520,058.—Lamp sketching camera. C. R. Jenne, Fort Wayne, Ind.

520,696.—Camera-shutter. W. J. Mc Collum, Swaledale, Ia.

520,707.—Reproducing objects in relief or intaglio by the aid of photography, M. Russo, Rome, Italy.

Literary and Business Notes.

THE COSMOPOLITAN.—Who are the most famous writers and artists of both continents? *The Cosmopolitan Magazine* is endeavoring to answer this inquiry by printing a list from month to month—in its contents pages. This magazine claims that notwithstanding its extraordinary reduction in price, it is bringing the most famous writers and artists of Europe and America to interest its readers, and in proof of this claim, submits the following list of contributors for the five months ending with February: Valdés, Howells, Paul Heyse, Francisque Sarcey, Robert Grant, John J. Ingalls, Lyman Abbott, Frederick Masson, Agnes Repplier, J G. Whittier, (posthumous,) Walter Besant, Mark Twain, St. George Mivart, Paul Bourget, Louise Chandler Moulton, Flammarion, Tissandier, F. Dempster Sherman, Adam Badeau, Capt. King, Arthur Sherburne Hardy, George Ebers, De Maupassant, Sir Edwin Arnold, Spielhagen, Andrew Lang, Berthelot, H. H. Boyesen, Hopkinson Smith, Lyman J. Gage, Dan'l C. Gilman, Franz Von Lenbach, Thomas A. Janvier. And for artists who have illustrated during the same time: Vierge, Reinhart, Marold, F. D. Small, Dan Beard, José Cabrinety, Oliver Herford, Remington, Hamilton Gibson, Otto Bacher, H. S. Mowbray, Otto Guillonnet, F. A. Attwood, Hopkinson Smith, George W. Edwards, Paul de Longpré, Habert-Dys, F. H. Sohell. How this is done for $1.50 a year, the editors of *The Cosmopolitan* alone know.

A STRIKING full-figure portrait of Captain Alfred T. Mahan, U. S. N., on whom Cambridge has recently conferred the degree of Doctor of Laws, forms the frontispiece of the *Review of Reviews* for July. This number contains many other interesting portraits—Populist Senators and Representatives at Washington, Mr. John W. Goff, the successful counsel of the New York Senate's Police Investigation Committee; Sir George Williams, the founder of the Y. M. C. A.; the late William Walter Phelps, Professor William D. Whitney, the Hon. George Peabody Wetmore, Rhode Island's Senator-elect; M. Casimir-Perier and Charles Dupuy, the French statesmen; Samuel Gompers, President of the Federation of Labor; the Coxeyite leaders, Professor Henry Drummond, Governor-elect Lord of Oregon, and other people prominently before the public.

In the Twilight Hour.

BIGNESS is not greatness, and smallness is not insignificance.

LIVE up to what you know and you will know more to live up to.

The devil sets no traps for the man who expects to get to heaven by being religious a couple of hours a week.

OBSERVE what direction your thoughts and feelings most readily take when you are alone, and you will then form a tolerably correct opinion of yourself.—*Bengel.*

EFFORTS to be permanently useful must be uniformly joyous.

MANY men owe the grandeur of their lives to their tremendous difficulties.

THE things which make men cry when they are young make them laugh when they are are old, if they only knew it.

IN the spiritual world a man is measured not by his genius, but by his likeness to God. God does not reason nor remember but he loves.—*F. W. Robertson.*